Assessment of the UAS Environmental Science Program (ENVS) through its graduates 2007-2012
By ENVS Faculty--May 11, 2012
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Introduction
Beginning in 1998 we designed the ENVS program to provide our students with courses and experiences that transfer knowledge and integrate multi-disciplinary understanding, while gaining technical skills and the ability to think critically about Earth’s systems.

We here make our first effort at using our 2011 ENVS Assessment Plan to determine whether our students are achieving the goals we designed and built into our program’s courses. Our measures assess the introductory, discipline-specific, technical, and program capstone levels by comparing totaled assessment scores and separate group scores of sub-disciplinary blocks. We utilize our students’ academic transcript data to create assessment scores for our required program blocks, from 17 of our most recent graduates 2007 to 2012.

Assessment Methods
ENVS student grades from required courses were converted to assessment scores and grouped by their programmatic role within our ENVS Bachelor of Science degree. The required courses that were included in this evaluation were:
- Earth Systems (ENVS 101, CHEM 105, CHEM 106)
- Atmosphere (PHYS 103/211, PHYS 104/212, ENVS 420)
- Biosphere (BIOL 105, BIOL 271, CHEM 341)
- Hydrosphere (GEOL 302, CHEM 350)
- Lithosphere (GEOL 104, GEOL 271, GEOL 301)
- Technology (ENVS 310/398, MATH 200, MATH 201)
- Student Capstones (ENVS 492, ENVS 491 or 498, Student Output Product)

** students select one of these courses—their sub discipline scores may be higher for a specific discipline area if they opted for a red or blue course in another sub discipline.
Assessment Scoring
Grades were converted to assessment scores as below.

COURSE GRADES ASSESSMENT SCORES
- A (A+ to A-) 1
- B (B+ to B-) 2
- C (C+ to C-) 3
- D (D+ to D-) 4

Student Capstone Experiences & Academic Product Scores
- Author on Peer-reviewed paper: 1
- Oral Presentation at conference: 1.5
- Author on Poster presented at scientific meeting: 2.5
- Author of UAS research paper based on student collected data for ENVS 498: 2.5
- Report about successful internship experience ENVS 491: 2.5
- NONE of the above: 3

Data from 17 ENVS Students (Now Alumni) 2007-2012

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Comparing Assessment Scores of 2 Cohorts of ENVS Graduates

Totaling the assessment scores for all of the sub-disciplinary course blocks, the earlier 2007-2009 cohort of ENVS graduates showed slightly higher assessment scores for their work across the program. This was mirrored in their GPA distribution as compared with that of the 2010-2012 cohort. Over the past two years we seem to have lost some of our student brain power. A single outlier student in the 2010-2012 cohort, did very poorly when compared with the average scores for all of his colleagues. When considering the remaining 16 students, they generally scored within the above average range of performance, and often at the higher end of that range. Generally students who do not earn a GPA above 2.50, are unable to graduate in ENVS.
Summary

Sixty percent of the UAS students who completed the ENVS B.S. Program between 2007 and 2012, earned ENVS Program assessment scores ranking them well above average (score of 9 or less). Their cumulative Grade Point Averages (GPAs) were in the 3.04-3.97 range, making them well above average in their program required courses, General Education Requirements (GERs), and Breadth courses.

Thirty percent of the ENVS Program graduates earned a cumulative GPA of 2.94-2.50, but still earned above average assessment scores (below 9 points) in most of their required discipline categories with one noteworthy exception.

Next year we hope to initiate student surveys of the ENVS program in our ENVS 492 required capstone seminar to collect direct verbal feed-back from our graduating students to add to our assessment data.